

In re Patent Application of:	PHILLIP BLANKENSHIP
Application Serial No.:	10/631,149
Filed:	July 31, 2003
For:	REFLECTIVE CRACK RELIEF PAVEMENT INTERLAYER WITH IMPROVED LOAD BEARING CAPACITY AND METHOD FOR DESIGNING INTERLAYER
Group Art Unit:	1794
Examiner:	DANIEL H. MILLER

1. I have no interest in the above referenced application.
2. I work for MeadWestvaco Asphalt Innovations as a Principal Scientist. I was born on March 13, 1940, in Vienna, Austria. I was granted a PhD Degree from the University in Vienna in 1968. I am an organic chemist. From 1969 to 1972 I worked as a post-doc at The Ohio State University and Case Western Reserve University in Ohio. From 1973 to 1975 I was employed as assistant (professor) at the University of Wuerzburg, Germany. In March 1975 I started to work for Westvaco (now MeadWestvac) in the Research Department. My research projects were related to asphalt emulsions and asphalt adhesion agents. My inventions are disclosed in more than 50 U.S. Patents. I have presented papers at several meetings sponsored by the asphalt industry around the world.

3. I have reviewed the Maier reference cited by the Examiner in the prosecution of the above referenced application, as well as the above referenced application and the Office Action dated November 24, 2008.

4. It is my opinion that Maier does not teach a binder that contains asphalt and polymers, as alleged by the Examiner in the Office Action.

5. Polyamine is not a generic class of polymer, as alleged by the Examiner in the Office Action.

6. Polyamine is a compound characterized by more than one amino group, whereas a polymer is a chemical compound or mixture of compounds formed by polymerization and consisting essentially of repeating structural units.

7. It is possible that a particular compound may be a polyamine and a polymer. However, it is also possible for a compound to be a polyamine but not a polymer, or to be a polymer but not a polyamine. Thus, polyamine is not a class of polymer. At best, the set of compounds that are polyamines may partly overlap the set of compounds that are polymers, but neither is fully inclusive of the other.

8. Even to the extent that such sets may theoretically overlap, polymers that are also polyamines are not known in the relevant art.

9. Polyamides are not known in the current art to modify asphalt or other bituminous materials, as alleged by the Examiner in the Office Action.


10. In the current state of the art, the most widely used modification of bitumen is the blending of SBS (styrene-butadien block copolymers) with bitumen at high temperature and high shear to obtain good dispersion. SBR (styrene-butadien rubber) is also being used. By introducing sulfur at high temperature, the polymer is partially cross-linked. The molecular weights of the polymers used in asphalt are 50,000-1,000,000 Daltons. **The purpose of the polymer in the bitumen is to improve its mechanical and rheological properties.** Compared to the non-modified bitumen the polymer- modified bitumen is more elastic at low temperature and stiffer at high temperature, thereby improving the longevity of the pavement.

11. Polyamines are, generally, polyethylenamines such as diethylene triamine, triethylene teramine, tetraethylene pentamine, etc. These products are in most cases of low molecular weight (100-1500 Dalton). In contrast to the polymers discussed above, they are water-soluble and liquid. In the UK Patent 1,448.158 to Meier , they are part of an additive oil that is added to the asphalt to improve adhesion. Part of the additive is phenol that will form a salt with the polyamine (independent of the molecular weight) and form in situ an adhesion promoter that improves the bond of asphalt to stone surface thereby preventing debonding of the asphalt coat by the stress of rolling traffic under wet conditions.

12. Polyamines are water soluble liquid, whereas polymers used for polymer modification of bitumen are solid. Because polyamines are water soluble, they do not contribute to the rheology of the binder.

13. Based on the foregoing, not only are polyamines not necessarily polymers, but they are not used in the current art. In fact, they are not suitable to serve the purpose served by polymers, namely improving the rheology of the binder.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.


PETER SCHILLING